

TENT COOPERATION TRE

PCT

INFORMATION CONCERNING ELECTED
OFFICES NOTIFIED OF THEIR ELECTION

(PCT Rule 61.3)

From the INTERNATIONAL BUREAU

To:

CHAS. HUDE A/S
H.C. Andersens Boulevard 33
DK-1553 Copenhagen
DANEMARKSapstype J.nr. Ing.
71268 TN

30 MRS. 2000

Date of mailing (day/month/year) 16 March 2000 (16.03.00)		AS 400		12.06.99	
Applicant's or agent's file reference 71268 TN/kp		IMPORTANT INFORMATION			
International application No. PCT/DK99/00353	International filing date (day/month/year) 23 June 1999 (23.06.99)	Priority date (day/month/year) 29 June 1998 (29.06.98)			
Applicant BENTLE PRODUCTS AG et al					

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

AP : GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW

EP : AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

National : AU, BG, BR, CA, CN, CZ, DE, IL, JP, KP, KR, MN, NO, NZ, PL, RO, RU, SE, SK, US

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

OA : BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

National : AE, AL, AM, AT, AZ, BA, BB, BY, CH, CU, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IN, IS, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MW, MX, PT, SD, SG, SI, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW

3. The applicant is reminded that he must enter the "national phase" before the expiration of 30 months from the priority date before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing, if prescribed, a translation of the international application (Article 39(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 36(3)(b) and Rule 74.1).

Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

The entry into the European regional phase is postponed until 31 months from the priority date for all States designated for the purposes of obtaining a European patent.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer:

Nestor Santesso

Telephone No. (41-22) 338.83.38

PATENT COOPERATION TREATY

WO 00/00420
PCT/DK99/00353

PCT

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

From the INTERNATIONAL BUREAU

To:

CHAS. HUDE A/S
H.C. Andersens Boulevard 33
DK-1553 Copenhagen V
DANEMARK

Sub. No.	Inventor	Inventor
KP	71268	TN
14 JAN. 2000		
AS 400	Til hustru	

400

Date of mailing (day/month/year) 06 January 2000 (06.01.00)		IMPORTANT NOTICE	
Applicant's or agent's file reference 71268 TN/kp			
International application No. PCT/DK99/00353	International filing date (day/month/year) 23 June 1999 (23.06.99)	Priority date (day/month/year) 29 June 1998 (29.06.98)	
Applicant BENTLE PRODUCTS AG et al			

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:
AU,CN,EP,IL,JP,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CU,CZ,DE,DK,EA,EE,ES,FI,GB,GD,GE,GH,GM,HR,
HU,ID,IN,IS,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MN,MW,MX,NO,NZ,OA,PL,PT,RO,RU,
SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,UA,UG,UZ,VN,YU,ZA,ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on
06 January 2000 (06.01.00) under No: WO 00/00420

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION CONCERNING
SUBMISSION OR TRANSMITTAL
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

CHAS. HUDE A/S
33, H.C. Andersens Boulevard
DK-1553 Copenhagen V
DANEMARK

Date of mailing (day/month/year) 03 August 1999 (03.08.99)	
Applicant's or agent's file reference 71268 TN/kp	IMPORTANT NOTIFICATION
International application No. PCT/DK99/00353	International filing date (day/month/year) 23 June 1999 (23.06.99)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 29 June 1998 (29.06.98)
Applicant BENTLE PRODUCTS AG et al	

1. The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
2. This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.
3. An asterisk(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
4. The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

<u>Priority date</u>	<u>Priority application No.</u>	<u>Country or regional Office or PCT receiving Office</u>	<u>Date of receipt of priority document</u>
29 June 1998 (29.06.98)	PA 1998 0833	DK	13 July 1999 (13.07.99)

The International Bureau of WIPO
34, chemin des Colmbettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer

S. De Michiel

Telephone No. (41-22) 338.83.38

PCT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 16 March 2000 (16.03.00)	Applicant's or agent's file reference 71268 TN/kp
International application No. PCT/DK99/00353	Priority date (day/month/year) 29 June 1998 (29.06.98)
International filing date (day/month/year) 23 June 1999 (23.06.99)	
Applicant AHM, Poul, Henrik	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

17 January 2000 (17.01.00)

☐ in a notice effecting later election filed with the International Bureau on:
2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Nestor Santesso Telephone No.: (41-22) 338.83.38
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PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum) 71268 TN/kp

Box No. I TITLE OF INVENTION

Packed tapes as well as methods and an assembly for packing said tapes

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

Bentle Products AG
1, Grabenstrasse
CH-6301 Zug
Switzerland

☐ This person is also inventor.

Telephone No.

+41 41 728 7333

Facsimile No.

+41 41 728 7339

Teleprinter No.

State (that is, country) of nationality:
Switzerland

State (that is, country) of residence:
Switzerland

This person is applicant for the purposes of: ☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

AHM, Poul Hentik
Edf. Mar Bella, Atico A
43, Calle San Pedro
E-3590 Altea (Alicante)
Spain

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:
Denmark

State (that is, country) of residence:
Spain

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: ☒ agent ☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

CHAS. HUDE A/S
33, H. C. Anders ns Boulevard
DK-1553 Copenhagen V
Denmark

Telephone No.

+45 33 15 45 14

Facsimile No.

+45 33 15 45 35

Teleprinter No.

19538 hude dk

☐ Address for correspondence: Mark this check-box where n agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ **AP** ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA** Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP** European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA** OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | |
|---|---|
| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LS Lesotho |
| <input checked="" type="checkbox"/> AM Armenia | <input checked="" type="checkbox"/> LT Lithuania |
| <input checked="" type="checkbox"/> AT Austria | <input checked="" type="checkbox"/> LU Luxembourg |
| <input checked="" type="checkbox"/> AU Australia | <input checked="" type="checkbox"/> LV Latvia |
| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> BR Brazil | <input checked="" type="checkbox"/> MW Malawi |
| <input checked="" type="checkbox"/> BY Belarus | <input checked="" type="checkbox"/> MX Mexico |
| <input checked="" type="checkbox"/> CA Canada | <input checked="" type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input checked="" type="checkbox"/> NZ New Zealand |
| <input checked="" type="checkbox"/> CN China | <input checked="" type="checkbox"/> PL Poland |
| <input checked="" type="checkbox"/> CU Cuba | <input checked="" type="checkbox"/> PT Portugal |
| <input checked="" type="checkbox"/> CZ Czech Republic | <input checked="" type="checkbox"/> RO Romania |
| <input checked="" type="checkbox"/> DE Germany | <input checked="" type="checkbox"/> RU Russian Federation |
| <input checked="" type="checkbox"/> DK Denmark | <input checked="" type="checkbox"/> SD Sudan |
| <input checked="" type="checkbox"/> EE Estonia | <input checked="" type="checkbox"/> SE Sweden |
| <input checked="" type="checkbox"/> ES Spain | <input checked="" type="checkbox"/> SG Singapore |
| <input checked="" type="checkbox"/> FI Finland | <input checked="" type="checkbox"/> SI Slovenia |
| <input checked="" type="checkbox"/> GB United Kingdom | <input checked="" type="checkbox"/> SK Slovakia |
| <input checked="" type="checkbox"/> GD Grenada | <input checked="" type="checkbox"/> SL Sierra Leone |
| <input checked="" type="checkbox"/> GE Georgia | <input checked="" type="checkbox"/> TJ Tajikistan |
| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TM Turkmenistan |
| <input checked="" type="checkbox"/> GM Gambia | <input checked="" type="checkbox"/> TR Turkey |
| <input checked="" type="checkbox"/> HR Croatia | <input checked="" type="checkbox"/> TT Trinidad and Tobago |
| <input checked="" type="checkbox"/> HU Hungary | <input checked="" type="checkbox"/> UA Ukraine |
| <input checked="" type="checkbox"/> ID Indonesia | <input checked="" type="checkbox"/> UG Uganda |
| <input checked="" type="checkbox"/> IL Israel | <input checked="" type="checkbox"/> US United States of America |
| <input checked="" type="checkbox"/> IN India | <input checked="" type="checkbox"/> UZ Uzbekistan |
| <input checked="" type="checkbox"/> IS Iceland | <input checked="" type="checkbox"/> VN Viet Nam |
| <input checked="" type="checkbox"/> JP Japan | <input checked="" type="checkbox"/> YU Yugoslavia |
| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | |
| <input checked="" type="checkbox"/> KR Republic of Korea | |
| <input checked="" type="checkbox"/> KZ Kazakhstan | |
| <input checked="" type="checkbox"/> LC Saint Lucia | <input checked="" type="checkbox"/> AE United Arab Emirates |
| <input checked="" type="checkbox"/> LK Sri Lanka | <input checked="" type="checkbox"/> ZA South Africa |
| <input checked="" type="checkbox"/> LR Liberia | <input type="checkbox"/> |

Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet:

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1) 29 June 1998 (29.06.1998)	PA 1998 00833	Denmark		
item (2)				
item (3)				

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA / SE

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)

Number

Country (or regional Office)

Box No. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following number of sheets:

request : 3
description (excluding sequence listing part) : 9
claims : 3
abstract : 1
drawings : 2
sequence listing part of description :
Total number of sheets : 18

This international application is accompanied by the item(s) marked below:

1. ☒ fee calculation sheet
2. ☐ separate signed power of attorney
3. ☐ copy of general power of attorney; reference number, if any:
4. ☐ statement explaining lack of signature
5. ☒ priority document(s) identified in Box No. VI as item(s):
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☒ other (specify): Official Letter of 17 February 1999

Figure of the drawings which should accompany the abstract:

1

Language of filing of the international application:

English

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

Bentle Products AG

Poul Henrik Ahm

Ervin Detreköy

Title: Manager

For receiving Office use only

1. Date of actual receipt of the purported international application:	2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority (if two or more are competent): ISA /	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.

For International Bureau use only

Date of receipt of the record copy by the International Bureau:

PCT

REC'D 09 OCT 2000

WIPO

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 71268 TN/kp	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DK99/00353	International filing date (day/month/year) 23/06/1999	Priority date (day/month/year) 29/06/1998
International Patent Classification (IPC) or national classification and IPC B65H45/101		
Applicant BENTLE PRODUCTS AG et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 9 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 17/01/2000	Date of completion of this report 05.10.2000
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Hannam. M Telephone No. +49 89 2399 2153



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/DK99/00353

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1,7	as originally filed			
2-6,8,9	as received on	13/06/2000	with letter of	09/06/2000

Claims, No.:

1-4	as originally filed			
5-12	as received on	13/06/2000	with letter of	09/06/2000

Drawings, sheets:

1/2,2/2	as originally filed
---------	---------------------

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/DK99/00353

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 1-12
	No:	Claims
Inventive step (IS)	Yes:	Claims 1-12
	No:	Claims
Industrial applicability (IA)	Yes:	Claims 1-12
	No:	Claims

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/DK99/00353

Reference is made to the following documents:

D1: US-A-5211621

Re Item V

Claim 1

Document D1 (see particularly figs.1&2, col.3, line 9 - col.4, line 22) discloses a flexible tape folded in a zigzag manner and constrained on each edge by guides. The folds in the tape are all substantially created at the edges of the resulting pile of zigzags, in line with the guides.

The subject matter of claim 1 differs from D1 in that protection for a packed tape is sought in which the tape bends don't all occur in line with the edges of the tape stack, rather they can be a varying distances therefrom. The technical effect of this arrangement is to allow free dispensing of the tape from the package without snagging or jamming.

Whilst similar folding of sheet material is known in the art, such folding in packed tape applications is hitherto unknown. Moreover, the skilled person would find no hint or direction in the art to suggest modifying the disclosure of D1 in such a way as to reach the subject matter of claim 1. The subject matter of claim 1 would thus appear to meet the requirements of both novelty and inventive step of the PCT (Article 33(2) and 33(3) PCT).

Claim 2

Dependent claim 2 discloses a preferred embodiment of the invention according to claim 1 and as such would also appear to meet the requirements of Article 33(2) and (3) PCT.

Claim 3

The method of producing a packed flexible tape according to claim 3 is directed towards producing the packed tape according to claim 1. Since the independent product claim meets the requirements of the PCT, the related method claim would equally appear to satisfy the novelty, Article 33(2) and inventive step, Article 33(3) requirements of the PCT.

Claims 4-9

Dependent claims 4-9 concern preferred embodiments of the invention according to claim 3 and as such would also appear to meet the requirements of Article 33(2) and (3) PCT.

Claim 10

The apparatus used in carrying out the method of claims 3-9 includes all the features necessary to fulfill the method according to the novel and inventive claim 3. Moreover, those apparatus features are not known from the available prior art. It would thus appear that the related apparatus claim equally fulfills the requirements of the PCT opposite novelty and inventive step (Articles 33(2) and 33(3)).

Claim 11

The alternative apparatus used in carrying out the method of claims 3-9 includes all the features necessary to fulfill the method according to the novel and inventive claim 3. Moreover, those apparatus features are not known from the available prior art. It would thus appear that the related apparatus claim equally fulfills the requirements of the EPC opposite novelty and inventive step (Articles 33(2) and 33(3)).

Claim 12

Dependent claim 12 discloses a preferred embodiment of the invention according to claim 10 or 11 and as such would also appear to meet the requirements of Article 33(2) and (3) PCT.

Brief Description of the Invention

The object of the invention is to provide a packed tape, especially a seed tape of the above type, which is easily pulled out through a dispensing opening in the germinating box on the bedding machine in question.

- 5 The object of the invention is also to provide a method of producing the above packed tape, said method being far more simple and inexpensive than hitherto known.

The packed tape according to the invention is characterised in that it is folded in a zigzag way into an oblong stack in such a manner that some of the bendings of the tape flush with the ends of the stack whereas the remaining bendings are placed at
10 varying distances therefrom. Once the packed tape has been placed in the germinating box and one end of the package has been opened, the resulting tape can be unproblematically pulled out through the dispensing opening of the germinating box, i.e. without said tape wedging in the dispensing opening or being damaged when passing said opening.

- 15 According to the invention the packed tape may comprise several stacks arranged in parallel, and the package may be a box optionally made of cardboard, whereby separating sheets may optionally be arranged between the stacks. In this manner it is possible to obtain a particularly long tape when the stacks arranged in parallel in the box have been placed in the germinating box, said particularly long tape being
20 very advantageous when it is to be bedded out by means of a bedding machine.

The invention relates also to a method of producing a packed flexible tape comprising a folded tape and a package. This method is characterised in that the tape is advanced continuously optionally from a tape supply to a packing location where said tape is zigzag folded by virtue of its weight and by means of side lowering means into at
25 least one oblong stack at the bottom of the package formed as a bag or a box in such

a manner that some of the bendings of the tape flush with the ends of the stack and that the remaining bendings are positioned at varying distances therefrom, and that after the filling of the package the layers of the stack are compressed and the package is closed.

- 5 As a result a simple packing of the tape in the desired shape is obtained, where a desired varying positioning of the bendings is obtained, and where the compressing of the stack and closing of the package have the effect that said package takes up minimum room during the following storage and/or transport.

- According to the invention the used side lowering means may be formed by substan-
10 tially vertical, endless, circulating lowering belts, the downward courses of said lowering belts opposing one another and being arranged at the ends of the stack, whereby the zigzagged tape forms bendings as said downward courses are tangent to the outermost tape bendings. In this manner it is ensured that the above flushing tape bendings are caught by the side lowering means as said bendings are formed
15 at the uppermost layer of the stack and then carried downwards in such a manner that room is quickly provided for a fresh layer of tape on top of the stack. As a result an increase of the packing speed is obtained.

- According to a particularly advantageous embodiment of the method according to the invention, the zigzag folding of the tape is carried out by means of at least one tape
20 lowering means pivotally suspended above the packing location, whereby each tape lowering means comprises two co-acting endless circulating belts passing the tape downwards therebetween, and whereby the zigzag folding is controlled by the oscillating movement of the tape lowering means in combination with the tape layering speed. In this manner an additional increase of the packing speed and an accurately
25 controlled positioning of the individual bendings of the tape are obtained.

When the tape is a germinating tape for instance comprising two layers of paper, this

tape may according to the invention be of a width corresponding to maximum 90% of the distance between the walls of the package. As a result the germinating tape positions itself correctly during the zigzag folding in the bag and does not slide aside or turn over.

- 5 Moreover the zigzag folding and the compressing of the tape to be packed may according to the invention be carried out in a compartment defined by the lowering belts and some side guides, such as plates or bars, and towards the bottom by a package, such as a bag, placed on an optionally stepwise, laterally displaceable support, whereby after the compressing the package can be rolled up and closed
10 about the stack at the same time as the compartment is removed. As a result a particularly reliable and fast zigzag folding of the tape is obtained in the package, and a faster production of the packed tape than hitherto known is also obtained.

- Moreover the bag used may according to the invention be made of shrink film, whereby the package, such as the bag, can be subjected to a shrinking after its closing, for instance a hot air shrinking. In this manner the packed tape presents a compact unit in which the various layers of the tape are fixed relative to one another, the film closely abutting the zigzagged tape.
15

- Furthermore, the packing may according to the invention be carried out under vacuum, whereby it is ensured that the package material abuts the tape particularly closely.
20

- The invention relates furthermore to an assembly for carrying out the method according to the invention, and this assembly is characterised in that it comprises an upwardly and downwardly open compartment, the opposing ends of which are provided with side lowering means in form of endless circulating belts, where the belt courses facing the interior of the compartment move downwards, said assembly further comprising a frame surrounding the compartment and retaining and optionally dis-
25

tending a package about said compartment, as well as a supporting means for the package, said supporting means being accommodated below the compartment and the frame and being separately adjustable in height and optionally stepwise, laterally displaceable. This assembly turned out to be particularly advantageous for carrying
5 out the method according to the invention.

Finally the invention relates to an assembly for carrying out the method according to the invention, said assembly being characterised in that it comprises at least one tape lowering means, which is preferably level adjustable and movable in the vertical direction during operation, and which is pivotally arranged about a point of the upper
10 end of said tape lowering means, and which per se comprises two abutting endless circulating belts, where the opposing belt courses run downwards, said assembly further comprising an electronic control unit for controlling the reciprocating movement of the tape lowering means and the adjustment in height and optionally the stepwise, lateral displacement of a supporting means. This assembly turned out to be
15 particularly advantageous for carrying out the method according to the invention, because it can control in a particularly accurate manner the length of each "zig" and "zag" of the zigzagged tape and the adjustment in height of the supporting means.

When the assembly is to be used for bags of shrink film, the assembly may according to the invention comprise a compressing means for the stack and a film shrinking
20 equipment, preferably of the hot air or heat radiation type. As a result, the completely packed tape can be available as a rather compact package, where the film closely abuts the tape.

In addition to a plastic film as packaging material, it is also possible to use laminated plastic, which is optionally thin and corrugated. It is also possible to use a cardboard
25 box as package.

Brief Description of the Drawings

The invention is explained in detail below with reference to the accompanying drawing, in which

Fig. 1 is a horizontal sectional view through a packed tape according to the invention with a greatly exaggerated distance between the tape layers, and where the zigzagged tape and surrounding package clearly appear,

Fig. 2 is a diagrammatic view of the steps of the method according to the invention,

Fig. 3 is a diagrammatic view of an assembly for carrying out the method according to the invention,

Fig. 4 is a diagrammatic view of a second assembly for carrying out the method according to the invention,

Fig. 5 is a perspective view of a package in form of a box.

Best Mode for Carrying Out the Invention

Fig. 1 is a diagrammatic view of a packed tape 1 comprising a folded tape 2 and a package 3 preferably made of plastic sheet. As illustrated, the tape 2 is folded in zigzag way in a stack. Some 2a of the bendings of the tape 2 are in contact with the package 3 at the ends of the stack, and the remaining bendings 2b are positioned at varying distances from said package.

Fig. 2 is a diagrammatic view of the individual steps of a method of producing a packed flexible tape comprising a folded tape and a package. As shown at 6, a continuous advancing of the tape to a packing location is initially carried out. As shown at 7, the tape is placed zigzag by way of its own weight and by means of side lowering means as a stack on the bottom of the package formed as a bag. As shown at 8,

Below the assembly shown in Fig. 3 is described in greater detail. The above side lowering means 12 and the side guides 15 form together an upwardly and downwardly open compartment, which can be lifted and lowered relative to the supporting means 18 of the assembly. The assembly comprises also a frame 22 arranged outside the compartment. This frame is used for distending the bag 3 about the compartment. The supporting means 18 is separately adjustable in height, which does not, however, appear from the Figure.

The assembly can also comprise a compressing means 24 rendering it possible to compress the tape 2. In addition, a film shrinking equipment not shown can be provided in the assembly, said equipment preferably being of the hot air or heat radiation type.

Fig. 4 illustrates a second assembly for carrying out the method according to the invention. This assembly is provided with a compartment with side lowering means 12' and a supporting means 18, on which the bottom of a bag 3 rests. Only the lowermost portion of the bag is shown in Fig. 4. The assembly comprises also a tape lowering means 25 pivotally arranged about a point 30 on the upper end of the tape lowering means 25. The tape lowering means 25 comprises abutting endless circulating belts 26 and 27, where the opposing belt courses 26a and 27a run downwards. In addition, a driving means 32 is provided, which reciprocates the tape lowering means 26 in an oscillation about the point 30 as indicated by means of the double arrow A. The control of the oscillating movement of the tape lowering means 25 is carried out by means of an electronic control unit 34. The tape 2 can be advanced to the compartment at a varying speed, and the oscillating movement of the tape lowering means 25 is controlled with variable oscillations in such a manner that the individual zigs and zags in the stack are provided with the desired size. The tape 2 is advanced from a tape supply 35 by means of advancing rollers 36 both in Fig. 3 and in Fig. 4. The tape lowering means 25 is level adjustable and movable in the vertical direction during the operation.

The assembly of Fig. 4 is also provided with a frame for retaining and distending the bag 3, but this frame is not shown.

Above reference has been made to a bag 3. Nothing prevents, however, said package from being for instance a cardboard box 40, cf. Fig. 5, and then the frame 22 supports the cardboard box. Then care is taken that the supporting means 18 can be displaced aside stepwise, for instance perpendicular to the plane of the paper in such a manner that many juxtaposed stacks can be placed in the box provided said box is sufficiently large. For instance seven juxtaposed tape lowering means, viz. one per tape, can optionally be provided in Fig. 4 instead of one tape lowering means 30. In this case, the package 41 is filled seven times as fast as usually, but the tapes in the seven stacks are not joined into one long coherent tape. Vertical separating sheets 42 of for instance cardboard or plastics can be inserted between the stacks of tape. These separating sheets can in the assemblies shown in Fig. 3 and Fig. 4 be lowered by means of particular sheet gripping members not shown. The separating sheets can optionally be built into the box 40. The box 40 can be considered a multi-package--box.

The invention may be modified in many ways without thereby deviating from the scope of the invention.

5. A method as claimed in claim 3, characterised in that the zigzag folding of the tape is carried out by means of at least one tape lowering means (25) pivotally suspended (30) above the packing location, whereby each tape lowering means comprises two co-acting endless circulating belts (26, 27) passing the tape downwards therebetween, and whereby the zigzag folding is controlled by the oscillating movement of the tape lowering means (25) in combination with the tape laying speed.
6. A method as claimed in claim 3, 4 or 5, where the tape is a germinating tape of for instance two layers of paper, characterised in that the germinating tape is of a width corresponding to maximum 90% of the distance between the walls of the package (3).
7. A method as claimed in one or more of the claims 3 to 6, characterised in that the zigzag folding and the compressing of the tape (2) to be packed is carried out in a compartment defined by the lowering belts (12) and some side guides (15), such as plates or bars, and towards the bottom (16) by a package, such as a bag, placed on an optionally stepwise, laterally displaceable support, whereby after the compressing of the tape the package can be rolled up and closed about the stack at the same time as the compartment is removed.
8. A method as claimed in one or more of the claims 3 to 7, characterised in that the bag (3) used is made of shrink film, and that the package, such as the bag, is subjected to a shrinking after its closing, for instance a hot air shrinking.
9. A method as claimed in one or more of the claims 3 to 8, characterised in that the packing is carried out under vacuum.
10. An assembly for carrying out the method as claimed in one or more of the claims 3 to 9, characterised in that it comprises an upwardly and

downwardly open compartment, the opposing ends of which are provided with side lowering means in form of endless circulating belts (12), where the belt courses (12a) facing the interior of the compartment move downwards, said assembly further comprising a frame (22) surrounding the compartment and retaining and optionally
5 distending a package (3, 40) about said compartment, as well as a supporting means (18) for the package (3, 40), said supporting means being accommodated below the compartment and the frame and being separately adjustable in height and optionally stepwise, laterally displaceable.

11. An assembly for carrying out the method as claimed in one or more of the
10 claims 3 to 10 characterised in that it comprises at least one tape lowering means (25), which is preferably level adjustable and movable in the vertical direction during operation, and which is pivotally arranged about a point (30) of the upper end of said tape lowering means, and which per se comprises two abutting endless circulating belts (26, 27), where the opposing belt courses (26a, 27a) run downwards, said
15 assembly further comprising an electronic control unit (34) for controlling the reciprocating movement of the tape lowering means (25) and the adjustment in height and optionally the stepwise, lateral displacement of a supporting means (18).

12. An assembly as claimed in claim 10 or 11, and where the bag (3) is made of shrink film, characterised in that it comprises a compressing means (24)
20 for the stack and a film shrinking equipment, preferably of the hot air or heat radiation type.

The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are competent, with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line below:

IPEA/ _____

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty:

The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only	
Identification of IPEA	Date of receipt of DEMAND
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION	
Applicant's or agent's file reference 71268 TN/kp	
International application No. PCT/DK99/00353	International filing date (day/month/year) 23 June 1999 (23.06.99)
(Earliest) Priority date (day/month/year) 29 June 1998 (29.06.98)	
Title of invention Packed tapes as well as methods and an assembly for packing said tapes	
Box No. II APPLICANT(S)	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
Bentle Products AG 1, Grabenstrasse CH-6301 Zug Switzerland	
Telephone No.: +41 41 728 7333	
Facsimile No.: +41 41 728 7339	
Teleprinter No.:	
State (that is, country) of nationality: Switzerland	State (that is, country) of residence: Switzerland
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
AHM, Poul Henrik Edf. Mar Bella, Atico A 43, Calle San Pedro E-03590 Altea (Alicante) Spain	
State (that is, country) of nationality: Denmark	State (that is, country) of residence: Spain
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
State (that is, country) of nationality:	State (that is, country) of residence:
<input type="checkbox"/> Further applicants are indicated on a continuation sheet.	

Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCEThe following person is ☒ agent ☐ common representativeand ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.Name and address: *(Family name followed by given name; for a legal entity, full official designation.
The address must include postal code and name of country.)*CHAS. HUDE A/S
33, H. C. Andersens Boulevard
DK-1553 Copenhagen V
Denmark

Telephone No.:

+45 33 15 45 14

Facsimile No.:

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Teleprinter No.:

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.**Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION****Statement concerning amendments:***

1. The applicant wishes the international preliminary examination to start on the basis of:

☒ the international application as originally filed

the description

☐ as originally filed☐ as amended under Article 34

the claims

☐ as originally filed☐ as amended under Article 19 (together with any accompanying statement)☐ as amended under Article 34

the drawings

☐ as originally filed☐ as amended under Article 342. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.3. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). *(This check-box may be marked only where the time limit under Article 19 has not yet expired.)*

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination: English☒ which is the language in which the international application was filed.☐ which is the language of a translation furnished for the purposes of international search.☐ which is the language of publication of the international application.☐ which is the language of the translation (to be) furnished for the purposes of international preliminary examination.**Box No. V ELECTION OF STATES**The applicant hereby elects all eligible States *(that is, all States which have been designated and which are bound by Chapter II of the PCT)*

excluding the following States which the applicant wishes not to elect:

Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- | | | |
|--|---|--------|
| 1. translation of international application | : | sheets |
| 2. amendments under Article 34 | : | sheets |
| 3. copy (or, where required, translation) of amendments under Article 19 | : | sheets |
| 4. copy (or, where required, translation) of statement under Article 19 | : | sheets |
| 5. letter | : | sheets |
| 6. other (<i>specify</i>) | : | sheets |

For International Preliminary
Examining Authority use only

received not received

<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>


The demand is also accompanied by the item(s) marked below:

- | | |
|--|---|
| 1. <input checked="" type="checkbox"/> fee calculation sheet | 4. <input type="checkbox"/> statement explaining lack of signature |
| 2. <input type="checkbox"/> separate signed power of attorney | 5. <input type="checkbox"/> nucleotide and or amino acid sequence listing in computer readable form |
| 3. <input type="checkbox"/> copy of general power of attorney; reference number, if any: | 6. <input checked="" type="checkbox"/> other (<i>specify</i>): Int. Search Report of 29 Oct 99 |

Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).

CHAS. HUDE A/S


Tage Nørgaard
Representative of the Applicant

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND:

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply.

☐ The applicant has been informed accordingly.

4. ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.

5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:

TENT COOPERATION TREATY

From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

WRITTEN OPINION

(PCT Rule 66)

To:

CHAS. HUDE A/S
H.C. Andersens Boulevard 33
DK-1553 Copenhagen V
DANEMARK

Sagstype PR 7	J.nr 71268	Ing. 71268 TN
20 MRS. 2000		
AS 400 dp	Til hvem TN	

Date of mailing
(day/month/year)

16.03.00

Applicant's or agent's file reference

71268 TN/kp

REPLY DUE

within 3 month(s)
from the above date of mailing

International application No.

PCT/DK99/00353

International filing date (day/month/year)

23/06/1999

Priority date (day/month/year)

29/06/1998

International Patent Classification (IPC) or both national classification and IPC

B65H45/101

Applicant

BENTLE PRODUCTS AG et al.

1. This written opinion is the **first** drawn up by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:

I	<input checked="" type="checkbox"/>	Basis of the opinion
II	<input type="checkbox"/>	Priority
III	<input type="checkbox"/>	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	<input type="checkbox"/>	Lack of unity of invention
V	<input checked="" type="checkbox"/>	Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	<input type="checkbox"/>	Certain document cited
VII	<input type="checkbox"/>	Certain defects in the international application
VIII	<input checked="" type="checkbox"/>	Certain observations on the international application
3. The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: **29/10/2000.**

Name and mailing address of the international preliminary examining authority:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer / Examiner

Hannam, M

Formalities officer (incl. extension of time limits)

Ghellere, M

Telephone No. +49 89 2399 2053



I. Basis of the opinion

1. This opinion has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed".*):

Description, pages:

1-9 as originally filed

Claims, No.:

1-12 as originally filed

Drawings, sheets:

1/2-2/2 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	11
Inventive step (IS)	Claims	10,12
Industrial applicability (IA)	Claims	

2. Citations and explanations

se separate sheet

Reference is made to the following documents:

D1: US-A-5211621

D2: US-A-4095779

D3: DE-A-2144686

Re Item V

Claims 10 and 11

In the PCT procedure, the use of the word 'for' (e.g. An assembly *for* carrying out the method.....) is interpreted as 'suitable for' and thus provides no limitation to the assembly for which protection is sought. For examination purposes, the wording of claim 10 is thus interpreted as, 'An assembly characterised in that....'

Thus, considering claim 10 with this in mind, document D2 (see fig.3) discloses an assembly from which the subject matter of claim 10 differs only in that a package and related supporting means surround the stack of folded tape being created. The incorporation of these differing features into an assembly according to D2 is considered to be obvious to somebody skilled in the art such that the subject matter of claim 10 lacks an inventive step according to Article 33(3) PCT.

Likewise, considering claim 11 with this in mind, document D3 (see page 5, line 25 - page 6, line 23 and the figure) discloses the assembly according to claim 11 such that the subject matter of the claim lacks novelty according to Article 33(2) PCT.

It would appear that the above claims can be rendered both novel and inventive through restricting their scope to an assembly machine specifically adapted to the carrying out of the method described in the application. Suitable wording for this might be:

An assembly used in carrying out the method as claimed in one or more of the claims 3-9 characterised etc.

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Claim 12

In combination with any claim on which they dependent, the additional features of claim 12 do not appear to lend an inventive step to the subject matter of the claim.

Re Item VIII

1. The vague statement in the description on page 9, lines 18-19 implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (Article 6 PCT) when used to interpret them (see also the PCT Guidelines, III-4.3a). This could be overcome by adding 'as defined by the appended claims' to the existing sentence.
2. The dependency of claim 11 should be restricted to the method claims 3-9.
3. It is not clear (Article 6 PCT) from the application how the assembly of claim 10 achieves the changing position of the folds on any one side of the stack. It would appear that the folds would all be produced in exactly the same position, i.e. at the edges of the stack in contact with the endless belts (12, 12a). Any information the applicant may wish to submit to clarify this should be confined to the letter of reply in order not to offend Article 34(2)(b) PCT.

European Patent Office
D-80298 München
Germany

Att: The Preliminary Examining Authority

Dear Sirs

International patent application No PCT/DK99/00353
Applicant: Bentle Products AG, et al
My ref: 71268 TN/kp

In reply to the Written Opinion of 16 March 2000 please find enclosed amended claims 10 and 11 (pages 11 and 12) and amended pages 2 to 6, 8 and 9 of the description. The amendments appear from the enclosed draft.

The claims have been amended as follows:

The new claims 10 and 11 correspond to the old claims 10 and 11 with the Examiner's suggested amendments incorporated.

No new subject matter has been introduced into the case by these amendments.

Re Item V of the Written Opinion
The old claims 10 and 11

With reference to the Examiner's remark regarding the word "for" (e.g. An assembly for carrying out the method ...) and the Examiner's cited documents D2 and D3 against the old claims 10 and 11 respectively, applicant has accepted to follow the Examiner's suggestion to substitute "for" by "used in" so that said claims start with the words "An assembly used in carrying out the method ...", conf. the new claims 10 and 11. The deficiencies regarding claims 10 and 11 and the documents D2 and D3 have thus been repaired.

The old claim 12

Although the old claim 12 in the Examiner's opinion does not appear to present an inventive step I have retained said claim as it seems harmless.

PATENTS

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COPY

9 June 2000

Chas. Huide

2

Re item VIII of the Written Opinion

Re "1" of item VIII

In the description on page 9, lines 18-19 the Examiner suggests adding "as defined by the appended claims" to the existing sentence. The applicant fully agrees with this suggestion. A correction has been made accordingly.

Re "2" of item VIII

The Examiner wants the dependency of claim 11 to be restricted to the method claims 3-9. The new claim 11 has been amended accordingly.

Re "3" of item VIII

The Examiner says that he cannot see where in the description there is anything mentioned about how the assembly of the old claim 10 achieves the changing position of the folds on any one side of the stack. Let me refer to page 8, lines 15-25 of the description in which it is stated: "The control of the oscillating movement of the tape lowering means 25 is carried out by means of an electronic control unit 34. The tape can be advanced to the compartment at a varying speed, and the oscillating movement of the tape lowering means 25 is controlled with variable oscillations in such a manner that the individual zigs and zags in the stack are provided with the desired size. The tape 2 is advanced from a tape supply 35 by means of advancing rollers 36". In other words: Through the electronic control unit 34 a control of the oscillating movement of the tape lowering means 25 is provided. This control takes into account the speed of said tape so that each zig and zag will be of just the correct size (i.e. so that certain selected zigs and zags will be big and contact the endless belts 12, 12a and certain other zigs and zags will be smaller and not contact said belts 12, 12a).

Hopefully this has clarified the matter sufficiently.

I respectfully ask the Examiner to accept the patentability of the present invention.

Yours faithfully
CHAS. HUDE A/S

Tage Nørgaard
Representative of the Applicant

Encs: Amended claims
Amended pages of the description
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Brief Description of the Invention

The object of the invention is to provide a packed tape, especially a seed tape of the above type, which is easily pulled out through a dispensing opening in the germinating box on the bedding machine in question.

- 5 The object of the invention is also to provide a method of producing the above packed tape, said method being far more simple and inexpensive than hitherto known.

10 The packed tape according to the invention is characterised in that the tape is zigzag folded into an oblong stack in such a manner that some of the bendings of the tape flush with the ends of the stack whereas the remaining bendings are positioned at varying distances therefrom. Once the packed tape has been placed in the germinating box and one end of the package has been opened, the resulting tape can be unproblematically pulled out through the dispensing opening of the germinating box, i.e. without said tape wedging in the dispensing opening or being damaged when passing said opening.

15 According to the invention the packed tape may comprise several stacks arranged in parallel, and the package may be a box optionally made of cardboard, whereby separating sheets may optionally be arranged between the stacks. In this manner it is possible to obtain a particularly long tape when the stacks arranged in parallel in the box have been placed in the germinating box, said particularly long tape being very advantageous when it is to be bedded out by means of a bedding machine.

20 The invention relates also to a method of producing a packed flexible tape comprising a folded tape and a package. This method is characterised in that the tape is advanced continuously optionally from a tape supply to a packing location where said tape is zigzag folded by virtue of its weight and by means of side lowering means into at least one oblong stack at the bottom of the package formed as a bag or a box in such

a manner that some of the bendings of the tape flush with the ends of the stack and that the remaining bendings are positioned at varying distances therefrom, and that after the filling of the package the layers of the stack are compressed and the package is closed. As a result a simple packing of the tape in the desired shape is obtained, where a desired varying positioning of the bendings is obtained, and where the compressing of the stack and closing of the package have the effect that said package takes up minimum room during the following storage and/or transport.

According to the invention the used side lowering means may be formed by substantially vertical, endless, circulating lowering belts, the downward courses of said lowering belts opposing one another and being arranged at the ends of the stack, whereby the zigzagged tape forms bendings as said downward courses are tangent to the outermost tape bendings. In this manner it is ensured that the above flushing tape bendings are caught by the side lowering means as said bendings are formed at the uppermost layer of the stack and then carried downwards in such a manner that room is quickly provided for a fresh layer of tape on top of the stack. As a result an increase of the packing speed is obtained.

According to a particularly advantageous embodiment of the method according to the invention, the zigzag folding of the tape is carried out by means of at least one tape lowering means pivotally suspended above the packing location, whereby each tape lowering means comprises two co-acting endless circulating belts passing the tape downwards therebetween, and whereby the zigzag folding is controlled by the oscillating movement of the tape lowering means in combination with the tape layering speed. In this manner an additional increase of the packing speed and an accurately controlled positioning of the individual bendings of the tape are obtained.

When the tape is a germinating tape for instance comprising two layers of paper, this

tape may according to the invention be of a width corresponding to maximum 90% of the distance between the walls of the package. As a result the germinating tape positions itself correctly during the zigzag folding in the bag and does not slide aside or turn over.

5 Moreover the zigzag folding and the compressing of the tape to be packed may according to the invention be carried out in a compartment defined by the lowering belts and some side guides, such as plates or bars, and towards the bottom by a package, such as a bag, placed on an optionally stepwise, laterally displaceable support, whereby after the compressing the package can be rolled up and closed about the stack at the same time as the compartment is removed. As a result a particularly reliable and fast zigzag folding of the tape is obtained
10 in the package, and a faster production of the packed tape than hitherto known is also obtained.

Moreover the bag used may according to the invention be made of shrink film, whereby the package, such as the bag, can be subjected to a shrinking after its closing, for instance a hot air shrinking. In this manner the packed tape presents a compact unit in which the various
15 layers of the tape are fixed relative to one another, the film closely abutting the zigzagged tape.

Furthermore, the packing may according to the invention be carried out under vacuum, whereby it is ensured that the package material abuts the tape particularly closely.

20 The invention relates furthermore to an assembly used in carrying out the method according to the invention, and this assembly is characterised in that it comprises an upwardly and downwardly open compartment, the opposing ends of which are provided with side lowering means in form of endless circulating belts, where the belt courses facing the interior of the compartment move downwards, said assembly further comprising a frame surrounding the compartment and retaining and optionally dis-

tending a package about said compartment, as well as a supporting means for the package, said supporting means being accommodated below the compartment and the frame and being separately adjustable in height and optionally stepwise, laterally displaceable. This assembly turned out to be particularly advantageous for carrying out the method according to the invention.

Finally the invention relates to an assembly used in carrying out the method according to the invention, said assembly being characterised in that it comprises at least one tape lowering means, which is preferably level adjustable and movable in the vertical direction during operation, and which is pivotally arranged about a point of the upper end of said tape lowering means, and which per se comprises two abutting endless circulating belts, where the opposing belt courses run downwards, said assembly further comprising an electronic control unit for controlling the reciprocating movement of the tape lowering means and the adjustment in height and optionally the stepwise, lateral displacement of a supporting means. This assembly turned out to be particularly advantageous in carrying out the method according to the invention, because it can control in a particularly accurate manner the length of each "zig" and "zag" of the zigzagged tape and the adjustment in height of the supporting means.

When the assembly is to be used for bags of shrink film, the assembly may according to the invention comprise a compressing means for the stack and a film shrinking equipment, preferably of the hot air or heat radiation type. As a result, the completely packed tape can be available as a rather compact package, where the film closely abuts the tape.

In addition to a plastic film as packaging material, it is also possible to use laminated plastic, which is optionally thin and corrugated. It is also possible to use a cardboard box as package.

Brief Description of the Drawings

The invention is explained in detail below with reference to the accompanying drawing, in which

Fig. 1 is a horizontal sectional view through a packed tape according to the invention with a greatly exaggerated distance between the tape layers, and where the zigzagged tape and surrounding package clearly appear,

Fig. 2 is a diagrammatic view of the steps of the method according to the invention,

Fig. 3 is a diagrammatic view of an assembly used in carrying out the method according to the invention,

Fig. 4 is a diagrammatic view of a second assembly used in carrying out the method according to the invention,

Fig. 5 is a perspective view of a package in form of a box.

Best Mode for Carrying Out the Invention

Fig. 1 is a diagrammatic view of a packed tape 1 comprising a folded tape 2 and a package 3 preferably made of plastic sheet. As illustrated, the tape 2 is folded in zigzag way in a stack. Some 2a of the bendings of the tape 2 are in contact with the package 3 at the ends of the stack, and the remaining bendings 2b are positioned at varying distances from said package.

Fig. 2 is a diagrammatic view of the individual steps of a method of producing a packed flexible tape comprising a folded tape and a package. As shown at 6, a continuous advancing of the tape to a packing location is initially carried out. As shown at 7, the tape is placed zigzag by way of its own weight and by means of side lowering means as a stack on the bottom of the package formed as a bag. As shown at 8,

Below the assembly shown in Fig. 3 is described in greater detail. The above side lowering means 12 and the side guides 15 form together an upwardly and downwardly open compartment, which can be lifted and lowered relative to the supporting means 18 of the assembly. The assembly comprises also a frame 22 arranged outside the compartment. This frame is used for distending the bag 3 about the compartment. The supporting means 18 is separately adjustable in height, which does not, however, appear from the Figure.

The assembly can also comprise a compressing means 24 rendering it possible to compress the tape 2. In addition, a film shrinking equipment not shown can be provided in the assembly, said equipment preferably being of the hot air or heat radiation type.

Fig. 4 illustrates a second assembly used in carrying out the method according to the invention. This assembly is provided with a compartment with side lowering means 12' and a supporting means 18, on which the bottom of a bag 3 rests. Only the lowermost portion of the bag is shown in Fig. 4. The assembly comprises also a tape lowering means 25 pivotally arranged about a point 30 on the upper end of the tape lowering means 25. The tape lowering means 25 comprises abutting endless circulating belts 26 and 27, where the opposing belt courses 26a and 27a run downwards. In addition, a driving means 32 is provided, which reciprocates the tape lowering means 26 in an oscillation about the point 30 as indicated by means of the double arrow A. The control of the oscillating movement of the tape lowering means 25 is carried out by means of an electronic control unit 34. The tape 2 can be advanced to the compartment at a varying speed, and the oscillating movement of the tape lowering means 25 is controlled with variable oscillations in such a manner that the individual zigs and zags in the stack are provided with the desired size. The tape 2 is advanced from a tape supply 35 by means of advancing rollers 36 both in Fig. 3 and in Fig. 4. The tape lowering means 25 is level adjustable and movable in the vertical direction during the operation.

The assembly of Fig. 4 is also provided with a frame for retaining and distending the bag 3, but this frame is not shown.

5 Above reference has been made to a bag 3. Nothing prevents, however, said package from being for instance a cardboard box 40, cf. Fig. 5, and then the frame 22 supports the card-
board box. Then care is taken that the supporting means 18 can be displaced aside stepwise,
for instance perpendicular to the plane of the paper in such a manner that many juxtaposed
stacks can be placed in the box provided said box is sufficiently large. For instance seven
juxtaposed tape lowering means, viz. one per tape, can optionally be provided in Fig. 4
instead of one tape lowering means 30. In this case, the package 41 is filled seven times as
10 fast as usually, but the tapes in the seven stacks are not joined into one long coherent tape.
Vertical separating sheets 42 of for instance cardboard or plastics can be inserted between
the stacks of tape. These separating sheets can in the assemblies shown in Fig. 3 and Fig.
4 be lowered by means of particular sheet gripping members not shown. The separating
sheets can optionally be built into the box 40. The box 40 can be considered a
15 multi-package-box.

The invention may be modified in many ways without thereby deviating from the scope of the invention as defined in the appended claims.

5. A method as claimed in claim 3, characterised in that the zigzag folding of the tape is carried out by means of at least one tape lowering means (25) pivotally suspended (30) above the packing location, whereby each tape lowering means comprises two co-acting endless circulating belts (26, 27) passing the tape downwards therebetween, and whereby the zigzag folding is controlled by the oscillating movement of the tape lowering means (25) in combination with the tape laying speed.

6. A method as claimed in claim 3, 4 or 5, where the tape is a germinating tape of for instance two layers of paper, characterised in that the germinating tape is of a width corresponding to maximum 90% of the distance between the walls of the package (3).

7. A method as claimed in one or more of the claims 3 to 6, characterised in that the zigzag folding and the compressing of the tape (2) to be packed is carried out in a compartment defined by the lowering belts (12) and some side guides (15), such as plates or bars, and towards the bottom (16) by a package, such as a bag, placed on an optionally stepwise, laterally displaceable support, whereby after the compressing of the tape the package can be rolled up and closed about the stack at the same time as the compartment is removed.

8. A method as claimed in one or more of the claims 3 to 7, characterised in that the bag (3) used is made of shrink film, and that the package, such as the bag, is subjected to a shrinking after its closing, for instance a hot air shrinking.

9. A method as claimed in one or more of the claims 3 to 8, characterised in that the packing is carried out under vacuum.

10. An assembly used in carrying out the method as claimed in one or more of the claims 3 to 9, characterised in that it comprises an upwardly and

downwardly open compartment, the opposing ends of which are provided with side lowering means in form of endless circulating belts (12), where the belt courses (12a) facing the interior of the compartment move downwards, said assembly further comprising a frame (22) surrounding the compartment and retaining and optionally distending a package (3, 40) about said compartment, as well as a supporting means (18) for the package (3, 40), said supporting means being accommodated below the compartment and the frame and being separately adjustable in height and optionally stepwise, laterally displaceable.

11. An assembly used in carrying out the method as claimed in one or more of the claims 3 to 9 characterised in that it comprises at least one tape lowering means (25), which is preferably level adjustable and movable in the vertical direction during operation, and which is pivotally arranged about a point (30) of the upper end of said tape lowering means, and which per se comprises two abutting endless circulating belts (26, 27), where the opposing belt courses (26a, 27a) run downwards, said assembly further comprising an electronic control unit (34) for controlling the reciprocating movement of the tape lowering means (25) and the adjustment in height and optionally the stepwise, lateral displacement of a supporting means (18).

12. An assembly as claimed in claim 10 or 11, and where the bag (3) is made of shrink film, characterised in that it comprises a compressing means (24) for the stack and a film shrinking equipment, preferably of the hot air or heat radiation type.

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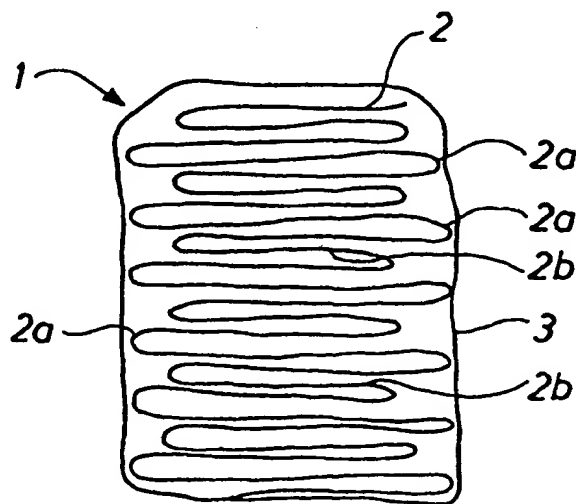
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(54) Title: PACKED TAPES AS WELL AS METHODS AND AN ASSEMBLY FOR PACKING SAID TAPES

(57) Abstract

A packed tape (1) comprises a folded tape (2) and a package (3) preferably made of plastic film. The tape (2) is zigzag folded into an oblong stack in such a manner that some (2a) of the bendings of the tape flush with the ends of the stack whereas the remaining bendings (2b) are positioned at varying distances therefrom. The resulting tape, especially a seed tape, is suited for being pulled out through a dispensing opening in a germinating box on a bedding machine.



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Title: Packed tapes as well as methods and an assembly for packing said tapes.

Technical Field.

The invention relates to a packed tape comprising a folded tape and a package preferably made of plastic film. The invention relates also to a method of producing a
5 packed flexible tape comprising a folded tape and a package.

Background Art

US-PS No. 5,211,621 discloses an assembly for zigzag folding a continuous tape, where the zigzag folding is carried out in a substantially horizontal plane and the bendings preferably oppose one another. The section of the assembly housing the
10 zigzagged portions is provided with side slides controlling the amount of advanced zigzagged tape portions. The zigzag folding is established by the tape being carried through the gap between two juxtaposed rollers, said rollers reciprocating substantially perpendicular to the advancing direction of the tape. Such a zigzag folding of a tape is not completely satisfactory when the tape is a seed tape because the position-
15 ing of the bendings opposite one another is then encumbered with draw-backs. When the tape is a seed tape it is in connection with the placing and later germination of the tape in a germinating box as well as during the following bedding out by means of machines for bedding out seed or germinating tapes very important that said tape is placed with the bendings uniformly distributed across the width of the germinating
20 box. Such a positioning of the bendings is very important for obtaining a uniform filling of the germinating box with tapes as said bendings take up more room in the box than the remaining portions of the tape, and consequently it is very important for uniform room conditions for the tape during the germination, said germination causing a swelling in the germinating portions. Finally it is very important for an
25 unproblematic pulling out of the tape from the germinating box through the dispensing opening thereof.

Brief Description of the Invention

The object of the invention is to provide a packed tape, especially a seed tape of the above type, which is easily pulled out through a dispensing opening in the germinating box on the bedding machine in question.

- 5 The object of the invention is also to provide a method of producing the above packed tape, said method being far more simple and inexpensive than hitherto known.

The packed tape according to the invention is characterised in that it is folded in a zigzag way into an oblong stack in such a manner that some of the bendings of the tape flush with the ends of the stack whereas the remaining bendings are placed at
10 varying distances therefrom. Once the packed tape has been placed in the germinating box and one end of the package has been opened, the resulting tape can be unproblematically pulled out through the dispensing opening of the germinating box, i.e. without said tape wedging in the dispensing opening or being damaged when passing said opening.

- 15 According to the invention the packed tape may comprise several stacks arranged in parallel, and the package may be a box optionally made of cardboard, whereby separating sheets may optionally be arranged between the stacks. In this manner it is possible to obtain a particularly long tape when the stacks arranged in parallel in the box have been placed in the germinating box, said particularly long tape being
20 very advantageous when it is to be bedded out by means of a bedding machine.

The invention relates also to a method of producing a packed flexible tape comprising a folded tape and a package. This method is characterised in that the tape is advanced continuously optionally from a tape supply to a packing location where said tape is zigzag folded by virtue of its weight and by means of side lowering means into at
25 least one oblong stack at the bottom of the package formed as a bag or a box in such

a manner that some of the bendings of the tape flush with the ends of the stack and that the remaining bendings are positioned at varying distances therefrom, and that after the filling of the package the layers of the stack are compressed and the package is closed.

- 5 As a result a simple packing of the tape in the desired shape is obtained, where a desired varying positioning of the bendings is obtained, and where the compressing of the stack and closing of the package have the effect that said package takes up minimum room during the following storage and/or transport.

According to the invention the used side lowering means may be formed by substan-
10 tially vertical, endless, circulating lowering belts, the downward courses of said lowering belts opposing one another and being arranged at the ends of the stack, whereby the zigzagged tape forms bendings as said downward courses are tangent to the outermost tape bendings. In this manner it is ensured that the above flushing tape bendings are caught by the side lowering means as said bendings are formed
15 at the uppermost layer of the stack and then carried downwards in such a manner that room is quickly provided for a fresh layer of tape on top of the stack. As a result an increase of the packing speed is obtained.

According to a particularly advantageous embodiment of the method according to the invention, the zigzag folding of the tape is carried out by means of at least one tape
20 lowering means pivotally suspended above the packing location, whereby each tape lowering means comprises two co-acting endless circulating belts passing the tape downwards therebetween, and whereby the zigzag folding is controlled by the oscillating movement of the tape lowering means in combination with the tape layering speed. In this manner an additional increase of the packing speed and an accurately
25 controlled positioning of the individual bendings of the tape are obtained.

When the tape is a germinating tape for instance comprising two layers of paper, this

tape may according to the invention be of a width corresponding to maximum 90% of the distance between the walls of the package. As a result the germinating tape positions itself correctly during the zigzag folding in the bag and does not slide aside or turn over.

- 5 Moreover the zigzag folding and the compressing of the tape to be packed may according to the invention be carried out in a compartment defined by the lowering belts and some side guides, such as plates or bars, and towards the bottom by a package, such as a bag, placed on an optionally stepwise, laterally displaceable support, whereby after the compressing the package can be rolled up and closed
- 10 about the stack at the same time as the compartment is removed. As a result a particularly reliable and fast zigzag folding of the tape is obtained in the package, and a faster production of the packed tape than hitherto known is also obtained.

- Moreover the bag used may according to the invention be made of shrink film, whereby the package, such as the bag, can be subjected to a shrinking after its closing, for instance a hot air shrinking. In this manner the packed tape presents a compact unit in which the various layers of the tape are fixed relative to one another, the film closely abutting the zigzagged tape.
- 15

- Furthermore, the packing may according to the invention be carried out under vacuum, whereby it is ensured that the package material abuts the tape particularly closely.
- 20

- The invention relates furthermore to an assembly for carrying out the method according to the invention, and this assembly is characterised in that it comprises an upwardly and downwardly open compartment, the opposing ends of which are provided with side lowering means in form of endless circulating belts, where the belt courses facing the interior of the compartment move downwards, said assembly further comprising a frame surrounding the compartment and retaining and optionally dis-
- 25

tending a package about said compartment, as well as a supporting means for the package, said supporting means being accommodated below the compartment and the frame and being separately adjustable in height and optionally stepwise, laterally displaceable. This assembly turned out to be particularly advantageous for carrying out the method according to the invention.

Finally the invention relates to an assembly for carrying out the method according to the invention, said assembly being characterised in that it comprises at least one tape lowering means, which is preferably level adjustable and movable in the vertical direction during operation, and which is pivotally arranged about a point of the upper end of said tape lowering means, and which per se comprises two abutting endless circulating belts, where the opposing belt courses run downwards, said assembly further comprising an electronic control unit for controlling the reciprocating movement of the tape lowering means and the adjustment in height and optionally the stepwise, lateral displacement of a supporting means. This assembly turned out to be particularly advantageous for carrying out the method according to the invention, because it can control in a particularly accurate manner the length of each "zig" and "zag" of the zigzagged tape and the adjustment in height of the supporting means.

When the assembly is to be used for bags of shrink film, the assembly may according to the invention comprise a compressing means for the stack and a film shrinking equipment, preferably of the hot air or heat radiation type. As a result, the completely packed tape can be available as a rather compact package, where the film closely abuts the tape.

In addition to a plastic film as packaging material, it is also possible to use laminated plastic, which is optionally thin and corrugated. It is also possible to use a cardboard box as package.

Brief Description of the Drawings

The invention is explained in detail below with reference to the accompanying drawing, in which

Fig. 1 is a horizontal sectional view through a packed tape according to the invention with a greatly exaggerated distance between the tape layers, and where the zigzagged tape and surrounding package clearly appear,

Fig. 2 is a diagrammatic view of the steps of the method according to the invention,

Fig. 3 is a diagrammatic view of an assembly for carrying out the method according to the invention,

Fig. 4 is a diagrammatic view of a second assembly for carrying out the method according to the invention,

Fig. 5 is a perspective view of a package in form of a box.

Best Mode for Carrying Out the Invention

Fig. 1 is a diagrammatic view of a packed tape 1 comprising a folded tape 2 and a package 3 preferably made of plastic sheet. As illustrated, the tape 2 is folded in zigzag way in a stack. Some 2a of the bendings of the tape 2 are in contact with the package 3 at the ends of the stack, and the remaining bendings 2b are positioned at varying distances from said package.

Fig. 2 is a diagrammatic view of the individual steps of a method of producing a packed flexible tape comprising a folded tape and a package. As shown at 6, a continuous advancing of the tape to a packing location is initially carried out. As shown at 7, the tape is placed zigzag by way of its own weight and by means of side lowering means as a stack on the bottom of the package formed as a bag. As shown at 8,

the stack is then compressed, and as shown at 9 the bag is then closed. As shown at 10, the bag can be subjected to a shrinking provided it is made of shrink film, such as a hot air shrinking.

By the method, the side lowering means used can be formed by substantially vertical, 5 endless, circulating lowering belts, the downward courses of said lowering belts opposing one another and being arranged at the ends of the stack, where the zigzagged tape forms bendings as said downward courses are tangent to the outermost tape bendings. The above is explained below with reference to Fig. 4.

When the tape is a germinating tape, for instance made of two layers of paper, it can 10 be of a width of 15 to 20 mm or corresponding to maximum 80% to 90% of the distance between the walls of the bag. The dimension in question of the tape is the dimension perpendicular to the paper of Fig. 1. The zigzag folding and the compressing of the zigzagged tape can be carried out in the compartment shown in Figs. 3 and 4. This compartment is defined by side lowering means 12, 12' in form of substan- 15 tially vertical, endless, circulating side lowering belts 12a. The course of the two endless belts 12 running downwards is indicated at 12a. As shown, the zigzag folding is also carried out by means of some side guides, such as plates 15, associated with the compartment. Fig. 3 only shows one of these side guides. These side guides can, however, also be bars. The zigzag folding is carried out on a bottom 16 of a bag 3 20 placed on a supporting means 18. After the above compressing of the tape, which is performed in vertical direction, the bag 3 can be rolled up and closed about the stack by means of means not shown and simultaneously with the compartment 12, 15 being removed from said stack.

As mentioned above, the bag 3 can optionally be subjected to a shrinking, for in- 25 stance a hot air shrinking, in such a manner that it closely abuts the stack. The said packing can also be performed under vacuum.

Below the assembly shown in Fig. 3 is described in greater detail. The above side lowering means 12 and the side guides 15 form together an upwardly and downwardly open compartment, which can be lifted and lowered relative to the supporting means 18 of the assembly. The assembly comprises also a frame 22 arranged outside the compartment. This frame is used for distending the bag 3 about the compartment. The supporting means 18 is separately adjustable in height, which does not, however, appear from the Figure.

The assembly can also comprise a compressing means 24 rendering it possible to compress the tape 2. In addition, a film shrinking equipment not shown can be provided in the assembly, said equipment preferably being of the hot air or heat radiation type.

Fig. 4 illustrates a second assembly for carrying out the method according to the invention. This assembly is provided with a compartment with side lowering means 12' and a supporting means 18, on which the bottom of a bag 3 rests. Only the lowermost portion of the bag is shown in Fig. 4. The assembly comprises also a tape lowering means 25 pivotally arranged about a point 30 on the upper end of the tape lowering means 25. The tape lowering means 25 comprises abutting endless circulating belts 26 and 27, where the opposing belt courses 26a and 27a run downwards. In addition, a driving means 32 is provided, which reciprocates the tape lowering means 26 in an oscillation about the point 30 as indicated by means of the double arrow A. The control of the oscillating movement of the tape lowering means 25 is carried out by means of an electronic control unit 34. The tape 2 can be advanced to the compartment at a varying speed, and the oscillating movement of the tape lowering means 25 is controlled with variable oscillations in such a manner that the individual zigs and zags in the stack are provided with the desired size. The tape 2 is advanced from a tape supply 35 by means of advancing rollers 36 both in Fig. 3 and in Fig. 4. The tape lowering means 25 is level adjustable and movable in the vertical direction during the operation.

The assembly of Fig. 4 is also provided with a frame for retaining and distending the bag 3, but this frame is not shown.

Above reference has been made to a bag 3. Nothing prevents, however, said package from being for instance a cardboard box 40, cf. Fig. 5, and then the frame 22 supports the cardboard box. Then care is taken that the supporting means 18 can be displaced aside stepwise, for instance perpendicular to the plane of the paper in such a manner that many juxtaposed stacks can be placed in the box provided said box is sufficiently large. For instance seven juxtaposed tape lowering means, viz. one per tape, can optionally be provided in Fig. 4 instead of one tape lowering means 30. In this case, the package 41 is filled seven times as fast as usually, but the tapes in the seven stacks are not joined into one long coherent tape. Vertical separating sheets 42 of for instance cardboard or plastics can be inserted between the stacks of tape. These separating sheets can in the assemblies shown in Fig. 3 and Fig. 4 be lowered by means of particular sheet gripping members not shown. The separating sheets can optionally be built into the box 40. The box 40 can be considered a multi-package--box.

The invention may be modified in many ways without thereby deviating from the scope of the invention.

Claims

1. A packed tape (1) comprising at least one folded tape (2) and a package (3, 40) preferably made of plastic sheet, c h a r a c t e r i s e d in that the tape (2) is zigzag folded into at least one oblong stack in such a manner that some (2a) of the bendings
5 of the tape flush with the ends of the stack whereas the remaining bendings (2b) are positioned at varying distances therefrom.
2. A packed tape as claimed in claim 1, c h a r a c t e r i s e d in that the packed tape comprises several stacks arranged in parallel, and that the package is a box, for instance made of cardboard, and that separating sheets are optionally inserted be-
10 tween the stacks.
3. A method of producing a packed, flexible tape comprising a folded tape (2) and a package (3, 40), c h a r a c t e r i s e d in that the tape (2) is advanced continu-ously optionally from a tape supply (35) to a packing location where said tape (2) is zigzag folded by virtue of its weight and by means of side lowering means (12, 12a,
15 12') into at least one oblong stack on the bottom (16) of the package (3) formed as a bag or a box in such a manner that some (2a) of the bendings of the tape flush with the ends of the stack and that the remaining bendings (2b) are positioned at varying distances therefrom, and that after the filling of the package (3) the layers of the stack are compressed and the package is closed.
- 20 4. A method as claimed in claim 3, c h a r a c t e r i s e d in that the used side lowering means are formed by substantially vertical, endless, circulating lowering belts (12), the downward courses (12a) of said lowering belts opposing one another and being arranged at the ends of the stack, whereby the zigzagged tape (2) forms bendings (2a) as said downward courses (12a) are tangent to the outermost tape
25 bendings (2a).

5. A method as claimed in claim 3, c h a r a c t e r i s e d in that the zigzag folding of the tape is carried out by means of at least one tape lowering means (25) pivotally suspended (30) above the packing location, whereby each tape lowering means comprises two co-acting endless circulating belts (26, 27) passing the tape down-
5 wards therebetween, and whereby the zigzag folding is controlled by the oscillating movement of the tape lowering means (25) in combination with the tape laying speed.

6. A method as claimed in claim 3, 4 or 5, where the tape is a germinating tape of for instance two layers of paper, c h a r a c t e r i s e d in that the germinating tape
10 is of a width corresponding to maximum 90% of the distance between the walls of the package (3).

7. A method as claimed in one or more of the claims 3 to 6, c h a r a c t e r i s e d in that the zigzag folding and the compressing of the tape (2) to be packed is carried out in a compartment defined by the lowering belts (12) and some side guides (15),
15 such as plates or bars, and towards the bottom (16) by a package, such as a bag, placed on an optionally stepwise, laterally displaceable support, whereby after the compressing of the tape the package can be rolled up and closed about the stack at the same time as the compartment is removed.

20 8. A method as claimed in one or more of the claims 3 to 7, c h a r a c t e r i s e d in that the bag (3) used is made of shrink film, and that the package, such as the bag, is subjected to a shrinking after its closing, for instance a hot air shrinking.

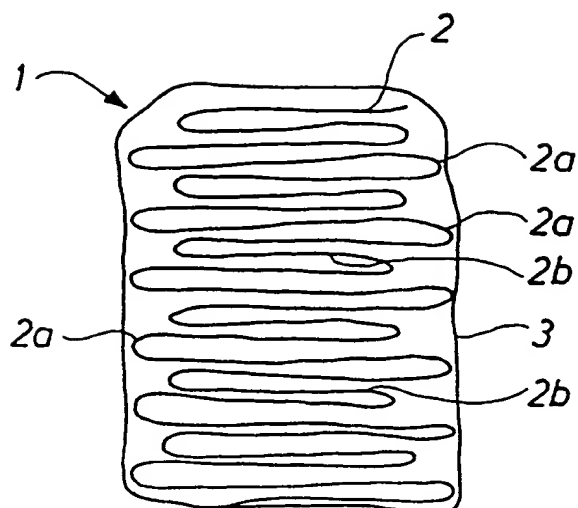
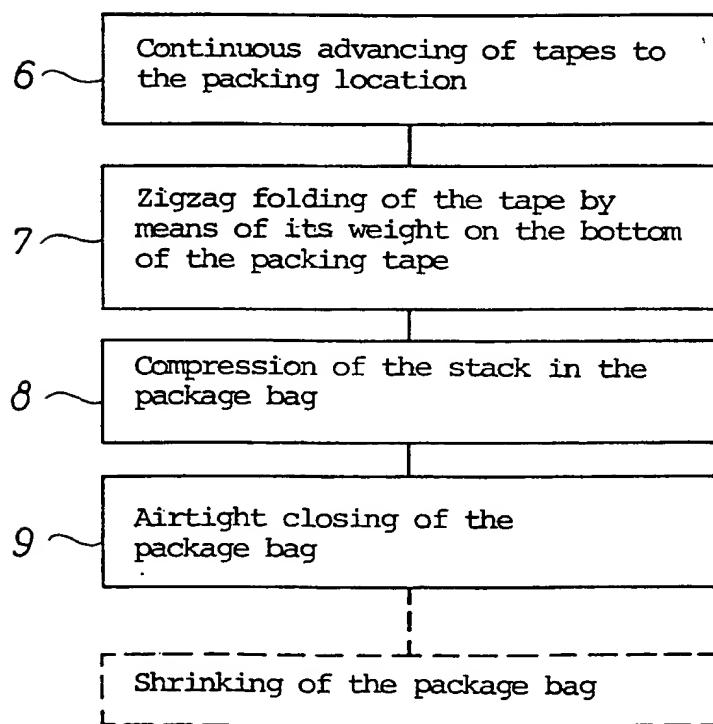
9. A method as claimed in one or more of the claims 3 to 8, c h a r a c t e r i s e d in that the packing is carried out under vacuum.

25 10. An assembly for carrying out the method as claimed in one or more of the claims 3 to 9, c h a r a c t e r i s e d in that it comprises an upwardly and

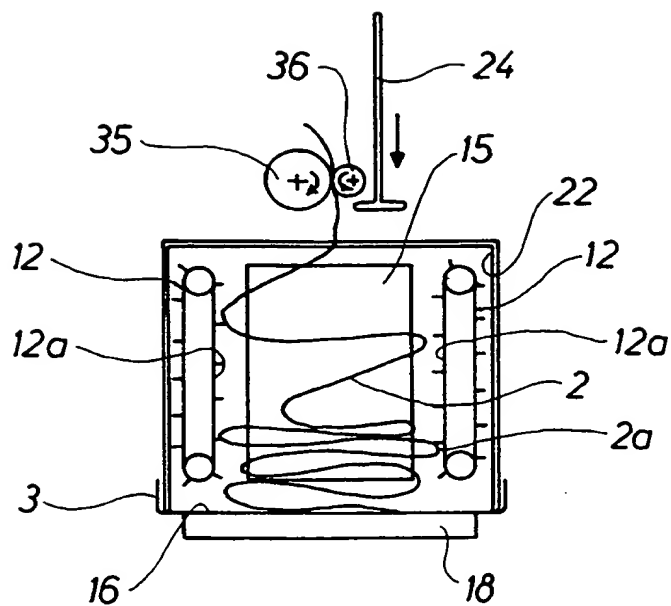
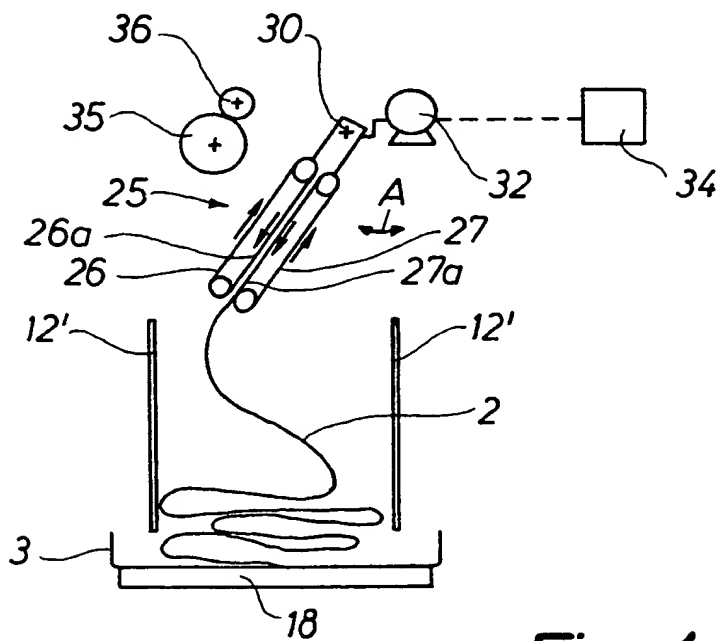
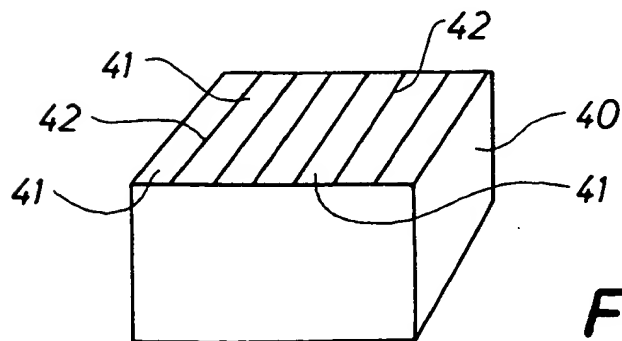
downwardly open compartment, the opposing ends of which are provided with side lowering means in form of endless circulating belts (12), where the belt courses (12a) facing the interior of the compartment move downwards, said assembly further comprising a frame (22) surrounding the compartment and retaining and optionally distending a package (3, 40) about said compartment, as well as a supporting means (18) for the package (3, 40), said supporting means being accommodated below the compartment and the frame and being separately adjustable in height and optionally stepwise, laterally displaceable.

11. An assembly for carrying out the method as claimed in one or more of the claims 3 to 10 characterised in that it comprises at least one tape lowering means (25), which is preferably level adjustable and movable in the vertical direction during operation, and which is pivotally arranged about a point (30) of the upper end of said tape lowering means, and which per se comprises two abutting endless circulating belts (26, 27), where the opposing belt courses (26a, 27a) run downwards, said assembly further comprising an electronic control unit (34) for controlling the reciprocating movement of the tape lowering means (25) and the adjustment in height and optionally the stepwise, lateral displacement of a supporting means (18).

12. An assembly as claimed in claim 10 or 11, and where the bag (3) is made of shrink film, characterised in that it comprises a compressing means (24) for the stack and a film shrinking equipment, preferably of the hot air or heat radiation type.

*Fig. 1**Fig. 2*

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**Fig. 3****Fig. 4****Fig. 5**

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 99/00353

A. CLASSIFICATION OF SUBJECT MATTER		
IPC6: B65H 45/101 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
IPC6: B65H		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
SE,DK,FI,NO classes as above		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
EDOC, WPI		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 2164081 A (HOBEMA MACHINENFABRIK HERMANN H. TATHS), 28 June 1973 (28.06.73), figure 4, claim 1, detail 16 --	1,3
A	US 3660867 A (WATSON), 9 May 1972 (09.05.72), figure 21, abstract --	1,3
A	US 5211621 A (CHEYNET), 18 May 1993 (18.05.93), abstract --	1,3
A	Patent Abstracts of Japan, Vol 8, No 136, M-304 abstract of JP 59-36070 A (YOKOHAMA GOMU K.K.), 28 February 1984 (28.02.84), see figures --	1,3
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
22 October 1999		29-10-1999
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86		Authorized officer Christer Falk / JA A Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 99/00353

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	US 5104107 A (DASH), 14 April 1992 (14.04.92) --	
A	US 4045012 A (JAKOB), 30 August 1977 (30.08.77) --	
A	US 4095779 A (IMAGI ET AL), 20 June 1978 (20.06.78) --	
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28/09/99

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